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### Claims

1. Communication device for receiving and transmitting orthogonal frequency division multiplexed signals – in the following referred to as OFDM signals – in a wireless communication system, in which each OFDM signal is composed of a plurality of subcarrier signals each being assigned to a respective transmission channel of said communication system, said communication device comprising:
- diversity antenna means (10) including a plurality of antenna elements (12),
  - examination means (26) adapted for examining, individually for each antenna element (12), at least one subcarrier signal of an OFDM reception signal received by a respective one of said antenna elements (12) and for gaining, from the result of such subcarrier signal examination, attenuation information on attenuation properties of at least some and preferably all of the transmission channels associated to the respective antenna element (12), and
  - amplitude adjustment means (30) adapted for adjusting, individually for each antenna element (12), the amplitude of at least one subcarrier signal of an OFDM transmission signal to be transmitted from a respective one of said antenna elements (12) in accordance with said attenuation information, such as to give a higher amplitude to said subcarrier signal of said OFDM transmission signal when said attenuation information indicates a lower attenuation of the associated transmission channel, and to give a lower amplitude to said subcarrier signal of said OFDM transmission signal when said attenuation information indicates a higher attenuation of the associated transmission channel.
2. Communication device according to claim 1,
- characterized in that said amplitude adjustment means (30) are adapted to suppress said subcarrier signal of said OFDM transmission signal to be transmitted from the respective antenna element (12) when said attenuation information indicates that the attenuation of the corresponding transmission channel exceeds a predetermined threshold.
3. Communication device according to claim 1,
- characterized by memory means (28) for storing data representing a predetermined reference signal, said examination means (26) being adapted for comparing a predetermined portion of said subcarrier signal of said OFDM reception signal with said

reference signal and for gaining said attenuation information from the result of such comparison.

4. Communication device according to claim 3,

5 characterized in that said reference signal comprises a reference preamble symbol, said examination means (26) being adapted for comparing a preamble portion of said subcarrier signal of said OFDM reception signal with said reference preamble symbol.

5. Communication device according to claim 1,

10 characterized in that said examination means (26) are further adapted for gaining, from said subcarrier signal examination, phase shift information on phase shift properties of at least some of the transmission channels associated to the respective antenna element (12), phase adjustment means (30) being provided which are adapted for phase adjusting, individually for each antenna element (12), at least one subcarrier signal of  
15 said OFDM transmission signal in accordance with said phase shift information.

6. Method for operating a communication device for receiving and transmitting orthogonal frequency division multiplexed signals – in the following referred to as OFDM signals – in a wireless communication system, in which each OFDM signal is  
20 composed of a plurality of subcarrier signals each being assigned to a respective transmission channel of said communication system, said communication device comprising diversity antenna means (10) including a plurality of antenna elements (12), said method comprising the steps of:

- examining, individually for each antenna element (12), at least one subcarrier signal  
25 of an OFDM reception signal received by a respective one of said antenna elements (12) and gaining, from the result of such subcarrier signal examination, attenuation information on attenuation properties of at least some and preferably all of the transmission channels associated to the respective antenna element (12), and
- adjusting the amplitude of at least one subcarrier signal of an OFDM transmission  
30 signal to be transmitted from a respective one of said antenna elements (12) in accordance with said attenuation information, such as to give a higher amplitude to said subcarrier signal of said OFDM transmission signal when said attenuation information indicates a lower attenuation of the associated transmission channel, and to give a lower  
35 amplitude to said subcarrier signal of said OFDM transmission signal when said attenuation information indicates a higher attenuation of the associated transmission channel.

7. Method according to claim 6,

characterized by the step of suppressing said subcarrier signal of said OFDM transmission signal to be transmitted from the respective antenna element (12) when said attenuation information indicates that the attenuation of the corresponding transmission channel exceeds a predetermined threshold.

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8. Method according to claim 6, wherein said communication device comprises memory means (28) for storing data representing a predetermined reference signal, said method being characterized by the step of comparing a predetermined portion of said subcarrier signal of said OFDM reception signal with said reference signal and gaining  
10 said attenuation information from the result of such comparison.

9. Method according to claim 8, wherein said reference signal comprises a reference preamble symbol, said method being characterized by the step of comparing a preamble  
15 portion of said subcarrier signal of said OFDM reception signal with said reference preamble symbol.

10. Method according to claim 6,  
characterized by the step of gaining, from said subcarrier signal examination, phase  
shift information on phase shift properties of at least some of the transmission channels  
20 associated to the respective antenna element (12) and phase adjusting at least one subcarrier signal of said OFDM transmission signal in accordance with said phase shift information.

11. Computer program which performs, when executed by a processor of a  
25 communication device, a method according to claim 6.

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